

REMARKS

Reconsideration of the above-identified application, as amended, is respectfully requested.

In the Official Action dated December 1, 2003, the Examiner first indicated a deficiency with respect to the Information Disclosure Statement, particularly, the omission of an English translation of two of the references submitted with the IDS of January 10, 2002. Applicants respectfully enclose herewith an English language summary of the reference entitled "Typen zonder toetsen" and will endeavor to obtain an English language equivalent/abstract of the Polish Patent reference PL 178077 B1 reference.

Further in the Office Action, the Examiner rejected Claims 2 and 22 under 35 U.S.C. §112, second paragraph, as allegedly failing to particularly point out and distinctly claim the subject matter that the applicant regards as the invention. Particularly, the Examiner indicated several instances of a lack of antecedent basis for terms in Claims 2 and 22 which have been addressed and corrected by applicants in the amendments provided herein.

Further in the Office Action, the Examiner rejected Claims 1, 2, 5-7, 10, 11, 15-18, and 21 under 35 U.S.C. §102(e), as being anticipated by Lieberman et al. (U.S. Patent No. 2002/0075240) (hereinafter "Lieberman"). The Examiner further rejected Claim 3 under 35 U.S.C. §103(a), as being unpatentable over Lieberman in view of Goldman (U.S. Patent No. 6,232,960) (hereinafter "Goldman"), and further rejected Claims 4, 8 and 19 under 35 U.S.C. §103(a), as being unpatentable over Lieberman in view of Hillman et al. (U.S. Patent No. 2002/0061217) (hereinafter "Hillman"). The Examiner further rejected Claims 9 and 20 under 35 U.S.C. §103(a), as being unpatentable over Lieberman in view of Torunoglu et al. (U.S. Patent No. 2003/00132921) (hereinafter "Torunoglu"). Further Claim 22 stands

rejected as unpatentable over Lieberman in view of Sandbach (U.S. Patent No. 2003/0011576) and Claim 14 stands rejected as unpatentable over Raffi et al. (U.S. Patent No. 6,614,422) (hereinafter "Raffi") in view of Goldman. Further, Claims 12-13 stand rejected under 35 U.S.C. §102(e), as being anticipated by Raffi.

With respect to the Examiner's rejection of Claims 1, 2, 5-7, 10, 11, 15-18, and 21 under 35 U.S.C. §102(e), as being anticipated by Lieberman, applicants respectfully disagree.

The sole reference Lieberman, relied upon as providing the basis for the anticipation rejection, is an optical solution, pure and simple. The optical solution of the prior art as taught in Lieberman is a different category than a radar solution as taught and claimed in the present invention. The optical solution for virtual keyboard entry according to Lieberman is a solution with an optical enablement, i.e., light emitted by the projector is the same light that is utilized to detect the location of the object (see Lieberman at page 2, para. 0034). When multiple colors are used (see Lieberman at page 2, para. 0027), the intensity of the colors may not be sufficient to detect the location of an object. Additionally, when displaying this multitude of colors, it becomes more difficult to distinguish reflections due to a user that wants to register a keyhit and 'background noise', in this instance, being light from other sources. (It is noted that this can be very disturbing even for the human eye, e.g., a scenario where a user is reading a book and someone/something is reflecting light into the reader's direction). Moreover, such a light solution described in Lieberman becomes problematic, e.g., in a situation where darker colors are implemented that are not able to reflect as intensive light signals to provide accuracy in registering keystrokes.

The claims of the invention, on the other hand, particularly, independent Claims 1, 12 and 15 have been amended to set forth the user of a radar device as the means

for detecting a virtual keyboard input whereby the radar device is adapted for detecting objects at locations within a limited range. It is respectfully submitted that in the art of radar technology, only until recent has radar been used with such precision in short range. Moreover, there are some unique operational advantages of radar over optical sensing techniques (e.g., its day-night, all-weather data acquisition capability). Thus, in the current response, Claims 2 and 3 are being canceled herein and the subject matter thereof being incorporated into amended Claim 1. Likewise, Claims 13 and 14 are being canceled herein and the subject matter thereof being incorporated into amended Claim 12. With respect to Claim 15, Claim 16 directed to a radar detecting implementation is being canceled herein and the subject matter thereof being incorporated in amended Claim 15. Thus, the use of radar device for detection, as described in the present specification and now claimed, is not visible, and therefore, not dependent on the color that is displayed in front of the user for selection or other kind of action requiring this displayed image as in the preferred embodiments described in Lieberman.

While the Examiner has referenced Goldman in the rejection of canceled Claims 3 and 14 (now incorporated in amended Claims 1 and 12), Goldman is deficient in regards as to how radar may be implemented in such a system with the short range precision required for signal detection, unlike the disclosure of the present invention. That is, while Goldman does refer to radar as an "enablement", he does not make further reference as to how a radar device may be implemented with precision for detecting objects at locations within a limited range nor does Goldman elucidate (much less enable or make it clear) how his solution in a radar enablement would be useful. In the art of radar technology, it has not been long since radar can be used with such precision in short range. Thus, applicants submit that

the present invention is the first to reference to radar technology in detail in combination with computer technology to enable for user input via the virtual data entry system described.

Further, with respect to the rejection of Claim 12, the device presented by Lieberman/Goldman does not teach the claimed recitation of "displaying one of: a screen image or portion of a screen image display . . .", i.e., a system that enables selection of sections of the graphical display to save energy and/or to enrich the user experience. For example, there is no teaching in either of the cited references of activating/deactivating portions of the keyboard, e.g., arming one or more virtual keys for registration as part of the initialization process prior to using the virtual keyboard. This facilitates a user being able to move his/her fingers and successfully touch a disarmed key(s) without registering the stroke as supported in the present specification at page 15 lines 4-10.

Further, none of the cited references teach the use of a radar device that enables detection of objects based on relative speed of movement as now set forth in newly added Claims 23 and 24. That is, the echos received from a radar signal will have a different frequency as the detected object moves relative to the transmitting and receiving device, in accordance with a Doppler shift effect. Thus, for example, a moving fingertip in a non-vertical direction is probably not meant to hit a key and thus may be ignored in the detection of user input, based on its detected relative speed of movement. Respectfully no new matter is being added by the addition of Claims 23 and 24 which support is fully found in the specification at page 14 lines 4-10.

In view of the foregoing, the Examiner is respectfully requested to withdraw the rejections of amended Claims 1, 12 and 15 as being anticipated by Lieberman whether taken alone or in combination with Goldman. Further, applicants request that all claims

dependent upon amended Claims 1 and 15, be allowed as dependent upon an allowed base claims as amended.

With respect to the Examiner's rejection of Claim 22 under 35 U.S.C. §112, second paragraph, applicant takes this opportunity to correct the alleged instances of lack of antecedent basis for the alleged unsupported terms in view of the amendments and remarks herein. Thus, the Examiner is additionally respectfully requested to withdraw the rejection of amended Claim 22.

In view of the foregoing remarks herein, it is respectfully submitted that this application is in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance be issued. If the Examiner believes that a telephone conference with the Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is requested to telephone the undersigned, Applicants' attorney, at the following telephone number: (516) 742-4343.

Respectfully submitted,



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Enclosure

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CET

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Subject: *IBM Confidential: Re: ibm invention disclosure

Steve,

Today my attention was drawn to a new technology of a Swedish company "Senseboard" and a Korean company "Samsung". They describe a technology which enables users of personal digital assistants (i.e. by Palm) to type in front of the computing device, without a physical keyboard as such being available. The result is achieved by two devices being mounted on the user's hands, detecting finger movement by rubber extensions. Disadvantage of this technology is the user has to type blind, meaning the user does not have a view of the keyboard at the place where he types. The signal from the rubber extensions is translated into position and send wireless (i.e. by using Bluetooth technology) to the computing device. As this technology still uses devices outside of the computing device itself, the position of the pressed key being detected physically with rubber extensions and no image of the keyboard being displayed, this technology is different from our invention using radar or laser to detect finger positions and displaying a keyboard image to assist the user in his choice.

<http://www.ad.nl/artikelen/interneteenPc/1007014756653.html>



Best regards, Tijs

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